

# MAINE PUBLIC HEALTH ALERT NETWORK SYSTEM

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***\*\*ADVISORY – Important Information\*\****

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TO: Clinicians Caring for Pregnant Women

FROM: Dora Anne Mills, M.D., M.P.H., Public Health Director

SUBJECT: **Pregnant Women and Novel Influenza A (H1N1)**

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Maine Center for Disease Control and Prevention (Maine CDC)  
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## **Pregnant Women and Novel Influenza A H1N1**

### **June 24, 2009**

This advisory is intended to provide guidance for the diagnosis and management of pregnant women with influenza like illness (ILI) during the current outbreak of novel influenza A H1N1 in Maine.

#### **Historical Context:**

Pregnant women are known to be at higher risk for complications from infection with seasonal influenza viruses, and severe disease among pregnant women was reported during past pandemics. An excess of influenza-associated deaths among pregnant women was reported during the pandemics of 1918–1919 and 1957–1958. Adverse pregnancy outcomes have been reported following previous influenza pandemics, with increased rates of spontaneous abortion and preterm birth reported, especially among women with pneumonia. Case reports and several epidemiologic studies conducted during inter-pandemic periods also indicate that pregnancy increases the risk for influenza complications for the mother and might increase the risk for adverse perinatal outcomes or delivery complications.

#### **Recent Experience in Massachusetts:**

Over the past few weeks, approximately 3 – 4% of confirmed cases of H1N1 infection in Massachusetts have been among pregnant women. For women whose hospitalization status is known, 41% were hospitalized, some requiring intubation and ventilator support. If all those whose hospitalization status is not known were assumed not to have been hospitalized, the rate would be 24%, which is more than 3 times the overall hospitalization rate of 7% among all confirmed cases. In Massachusetts, the average time between the first clinical visit and the initiation of antiviral therapy among pregnant women with H1N1 has been almost 2 days ([http://www.mass.gov/Eeohhs2/docs/dph/cdc/flu/swine\\_clinical\\_advisory\\_pregnant\\_women.rtf](http://www.mass.gov/Eeohhs2/docs/dph/cdc/flu/swine_clinical_advisory_pregnant_women.rtf)). **The observed severity of illness among pregnant women in Massachusetts highlights the need for early, empiric antiviral treatment.**

#### **Recommendations:**

**Given the prevalence of circulating influenza A H1N1 virus, pregnant women presenting with signs and symptoms consistent with ILI (fever and respiratory symptoms, including cough or sore throat) should receive prompt empiric antiviral treatment for influenza A H1N1.** Treatment should *not* be delayed awaiting confirmatory results of H1N1 virus testing. In particular, due to the varying sensitivity of rapid influenza tests, pregnant women with ILI should be **treated presumptively even if rapid influenza tests are negative** and should continue treatment unless more sensitive tests for influenza A H1N1 are specifically negative or until recommended treatment course is completed.

## **Treatment and chemoprophylaxis:**

The currently circulating novel influenza A (H1N1) virus is sensitive to the neuraminidase inhibitor antiviral medications zanamivir (Relenza®) and oseltamivir (Tamiflu®), but is resistant to the adamantane antiviral medications, amantadine (Symmetrel®) and rimantadine (Flumadine®). Pregnant women who meet current [case-definitions](#) for confirmed, probable or suspected novel influenza A (H1N1) infection should receive empiric antiviral treatment. Pregnant women who are close contacts with persons with suspected, probable or confirmed cases of novel influenza A (H1N1) should receive chemoprophylaxis.

As is recommended for other persons who are treated, antiviral treatment with zanamivir or oseltamivir should be initiated as soon as possible after the onset of influenza symptoms, with benefits expected to be greatest if started within 48 hours of onset, based on data from studies of seasonal influenza. However, some data from studies on seasonal influenza indicate benefit for hospitalized patients even if treatment is started more than 48 hours after onset. Recommended duration of treatment is five days, and for chemoprophylaxis is 10 days. Oseltamivir and zanamivir treatment and chemoprophylaxis regimens recommended for pregnant women are the same as those recommended for adults who have seasonal influenza. [Recommendations](#) for use of antivirals for pregnant women might change as data on antiviral susceptibilities become available.

One of the more well-studied adverse effects of influenza is its associated hyperthermia. Studies have shown that maternal hyperthermia during the first trimester doubles the risk of neural tube defects and may be associated with other birth defects and adverse outcomes. Limited data suggest that the risk for birth defects associated with fever might be mitigated by antipyretic medications or multivitamins that contain folic acid. Maternal fever during labor has been shown to be a risk factor for adverse neonatal and developmental outcomes, including neonatal seizures, encephalopathy, cerebral palsy, and neonatal death. Even though distinguishing the effects of the cause of fever from the hyperthermia itself is difficult, fever in pregnant women should be treated because of the risk that hyperthermia appears to pose to the fetus. Acetaminophen appears to be the best option for treatment of fever during pregnancy, although data on even this common exposure are also limited.

Pregnancy should not be considered a contraindication to oseltamivir or zanamivir use. Pregnant women might be at higher risk for severe complications from novel influenza A (H1N1), and the benefits of treatment or chemoprophylaxis with zanamivir or oseltamivir likely outweigh the theoretical risks of antiviral use. Oseltamivir and zanamivir are “Pregnancy Category C” medications, indicating that no clinical studies have been conducted to assess the safety of these medications for pregnant women. Because of the unknown effects of influenza antiviral drugs on pregnant women and their fetuses, oseltamivir or zanamivir should be used during pregnancy only if the potential benefit justifies the potential risk to the embryo or fetus. Although a few adverse effects have been reported in pregnant women who took these medications, no relation between the use of these medications and those adverse events has been established. Because of its systemic activity, oseltamivir is preferred for treatment of pregnant women. The drug of choice for prophylaxis is less clear. Zanamivir may be preferable because of its limited systemic absorption; however, respiratory complications that may be associated with zanamivir because of

its inhaled route of administration need to be considered, especially in women at risk for respiratory problems.

**Influenza A H1N1 antiviral medication dosing recommendations\***

Medication	Treatment	Chemoprophylaxis
<b>Oseltamivir</b>	75 mg capsule twice per day for 5 days	75 mg capsule once per day
<b>Zanamivir</b>	Two 5 mg inhalations (10 mg total) twice per day	Two 5 mg inhalations (10 mg total) once per day

**From:** *Interim Guidance on Antiviral Recommendations for Patients with Novel Influenza A (H1N1) Virus Infection and Their Close Contacts*; [www.cdc.gov/h1n1flu/recommendations.htm](http://www.cdc.gov/h1n1flu/recommendations.htm)

**Other ways to reduce risk for pregnant women:**

There is no vaccine available yet to prevent novel influenza A (H1N1); however, the risk for novel influenza A (H1N1) might be reduced by taking steps to reduce the chance of being exposed to respiratory infections. These actions include frequent hand washing (with soap and water or hand sanitizer), covering coughs and sneezes with a tissue or sleeve, as well as having ill persons stay home except to seek medical care and minimize contact with others in the household. Additional measures that can limit transmission of a new influenza strain include voluntary home isolation of members of households with confirmed or probable novel influenza A (H1N1) cases, reduction of unnecessary social contacts, and avoidance whenever possible of crowded settings.

Updated interim guidance on the use of face masks can be found at:  
<http://www.cdc.gov/h1n1flu/masks.htm>

**Breastfeeding considerations:**

Infants who are not breastfeeding are particularly vulnerable to infection and hospitalization for severe respiratory illness. Women who deliver should be encouraged to initiate breastfeeding early and feed frequently. Ideally, infants should receive most of their nutrition from breast milk, and unnecessary formula supplementation should be eliminated so the infant can receive as many maternal antibodies as possible.

If a woman is ill, she should continue breastfeeding and increase feeding frequency. If maternal illness prevents safe feeding at the breast, but she can still pump, encourage her to do so. The risk for novel influenza A (H1N1) transmission through breast milk is unknown. However, reports of viremia with seasonal influenza infection are rare.

Expressed milk should be used for infants too ill to feed at the breast. In certain situations, infants may be able to use donor human milk from a [HMBANA-certified milk bank](#).

Antiviral medication treatment or prophylaxis is not a contraindication for breastfeeding.

Instruct parent and caretakers on how to protect their infant from the spread of germs that cause respiratory illnesses like novel influenza A (H1N1), including respiratory hygiene as well as:

- Wash adults' and infants' hands frequently with soap and water, especially after infants place their hands in their mouths.
- Keep infants and mothers as close together as possible and encourage early and frequent skin-to-skin contact between mothers and their infants.
- Limit sharing of toys and other items that have been in infants' mouths. Wash thoroughly with soap and water any items that have been in infants' mouths.
- Keep pacifiers (including the pacifier ring/handle) and other items out of adults' or other infants' mouths prior to giving to the infant.
- Practice cough and sneeze etiquette, by covering all coughs and sneezes with a tissue or sleeve.

**For More Information:**

The latest clinical guidance related to pregnant women and influenza A H1N1 can be found on the CDC website:

***Pregnant women and novel influenza A H1N1 clinical considerations:***

[www.cdc.gov/h1n1flu/clinician\\_pregnant.htm](http://www.cdc.gov/h1n1flu/clinician_pregnant.htm)

***Guidance for pregnant women in education, childcare and health care:***

[www.cdc.gov/h1n1flu/guidance/pregnant-hcw-educators.htm](http://www.cdc.gov/h1n1flu/guidance/pregnant-hcw-educators.htm)

***What pregnant women should know:***

[www.cdc.gov/h1n1flu/guidance/pregnant.htm](http://www.cdc.gov/h1n1flu/guidance/pregnant.htm)

***Breastfeeding your baby:***

[www.cdc.gov/h1n1flu/breastfeeding.htm](http://www.cdc.gov/h1n1flu/breastfeeding.htm)

***Maine CDC's H1N1 Website:***

<http://www.maine.gov/dhhs/boh/swine-flu-2009.shtml>